Few-cycle solitons in supercontinuum generation dynamics

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Résumé en anglais	We review several propagation models that do not rely on the slowly-varying-envelope approximation (SVEA), and can thus be considered as fundamental models addressing the formation and propagation of few-cycle pulsed field structures and solitary waves arising in the course of intense ultrashort optical pulse evolution in nonlinear media and beyond octave-bandwidth optical spectrum broadening. These generic models are: the modified-Korteweg-de Vries (mKdV), the sine-Gordon (sG), and the mixed mKdV-sG equations. To include wave polarization dynamics, the vector extensions of both mKdV and sG equations are introduced. Multi-octave-spanning supercontinuum generation and few-cycle soliton structures are highlighted from numerical simulations.
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